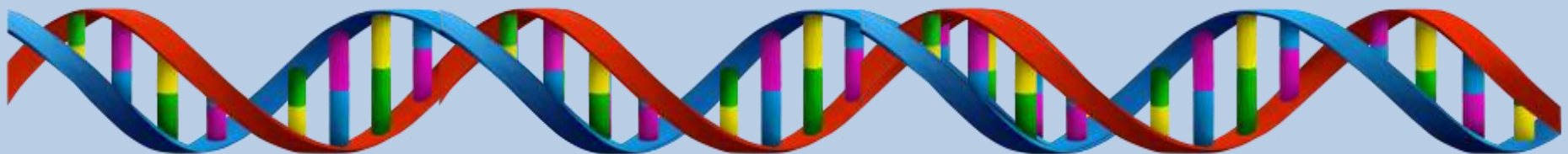


- 1. What processes remove carbon dioxide from the atmosphere?**
- 2. Where can carbon be stored on Earth? (Carbon reservoirs)**
- 3. Why would it be good for carbon to be stored in places other than the atmosphere?**



Carbon Cycle

- **Take out your carbon cycle lab sheet**
- **5 minutes to work in your groups to answer your questions**

Carbon Cycle

- **Do volcanos emit more CO₂ than humans?**

Carbon Cycle

- **Do volcanos emit more CO₂ than humans?**
- **Humans contributed 35 billion gigatons in 2010**
- **On average, volcanos emit .13-.44 gigatons/year**

Carbon Cycle

- **1980 Mt. St. Helens emitted 10 million tons of CO₂ in 9 hours.**
- **Humans emit this much CO₂ in 2.5 hours!**



Funny Video Friday

Nitrogen Cycle

- **Get out your Fish and the Forest questions**



Nitrogen Cycle

- **Why are bears ecosystem engineers?**
- **What would happen to the ecosystem if bears were removed in the 1940s like proposed?**

Nitrogen Cycle

- **You are a nitrogen atom!!**

Nitrogen Cycle

- **Start at the lab station that correspond to your table group number**
- **Place ONE stamp in your start location box**
- **Roll the dice to find out where to go next**
- **Place ONE stamp on your passport when you get there AND note how you got there**

Nitrogen Cycle

- **When your passport is full go back to your seat**
- **Complete your analysis questions**
- **This goes on page 21**

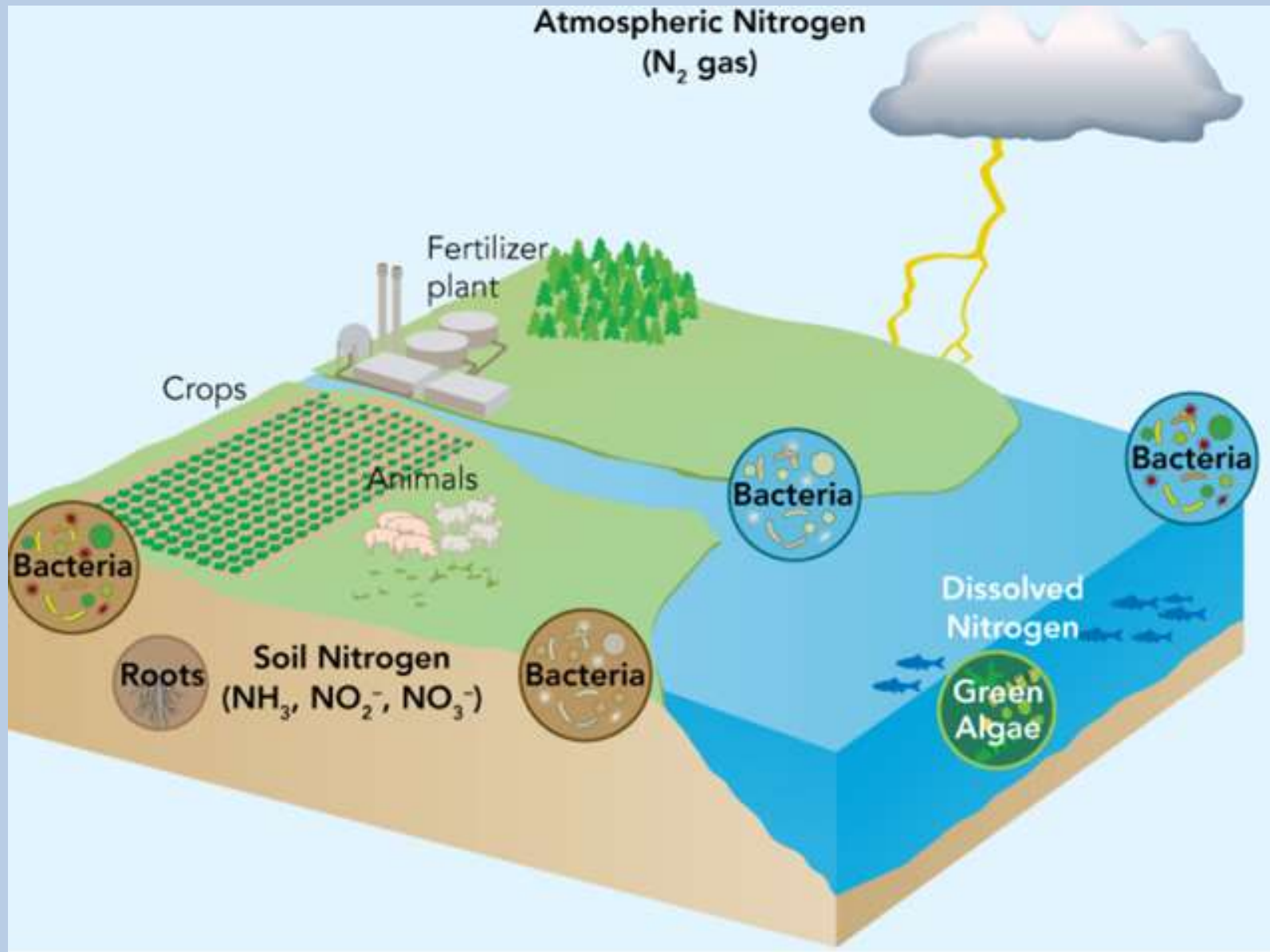
Nitrogen Cycle

- **How did you cycle through the ecosystem?**

Nitrogen Cycle

- ***Processes:***
 - **Nitrogen Fixation**
 - **Denitrification**
 - **Leaching**

Nitrogen Cycle

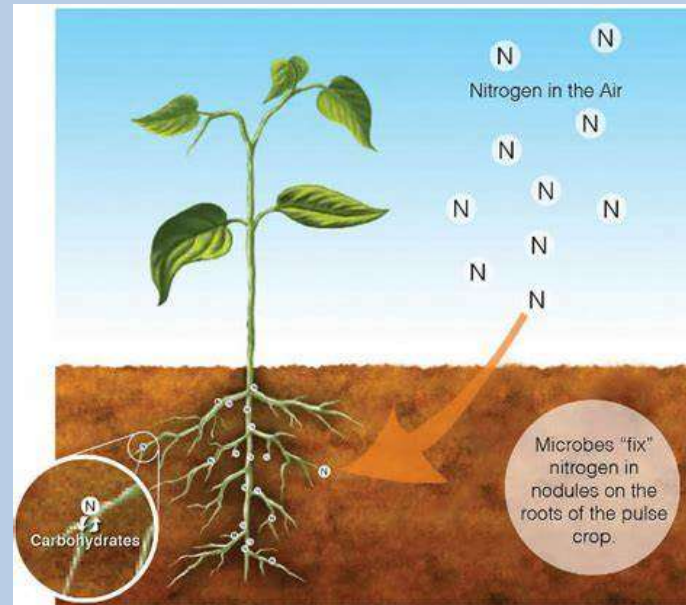


DO NOT WRITE THIS

1. **Nitrogen fixation: lightening or bacteria turn N_2 from the atmosphere into ammonia (NH_3) in soil or water. Bacteria in water and soil then turn ammonia into nitrates (NO_3)**

What you need to know:

1. Nitrogen fixation: bacteria takes nitrogen gas from the atmosphere and fixes it into a form of nitrogen that producers can absorb

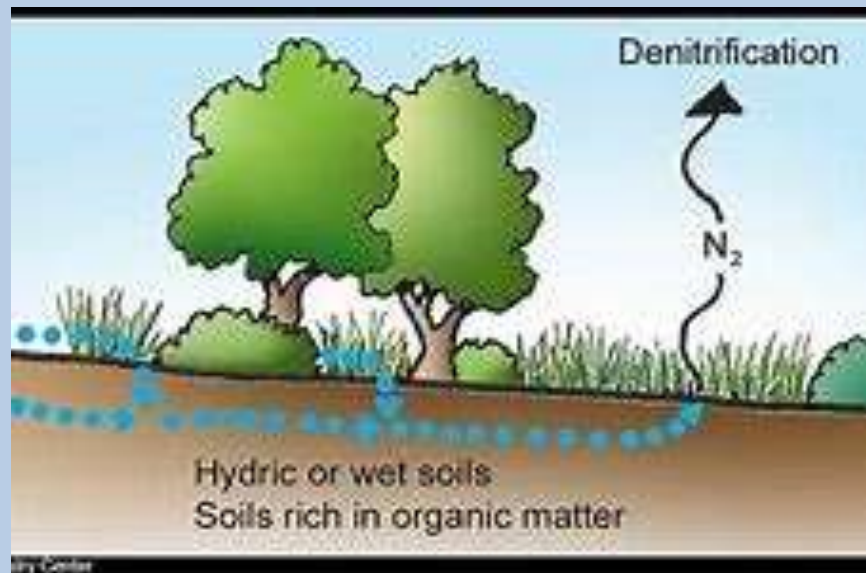


Nitrogen Cycle

2. Producers take up nitrate
3. Consumers eat producers
4. Decomposers break down dead organic matter and return nitrogen to soil and water

What you need to know:

5. Denitrification: bacteria turn nitrogen from plants back into nitrogen gas to be released into the atmosphere



Nitrogen Cycle

6. Humans capture N_2 to use in fertilizer
7. Fertilizer increases nitrogen concentration in soil (crops)
8. Leaching: excess nitrogen is washed into the waterways

Nitrogen Cycle

- **What is the relationship between nitrogen fixation and denitrification?**

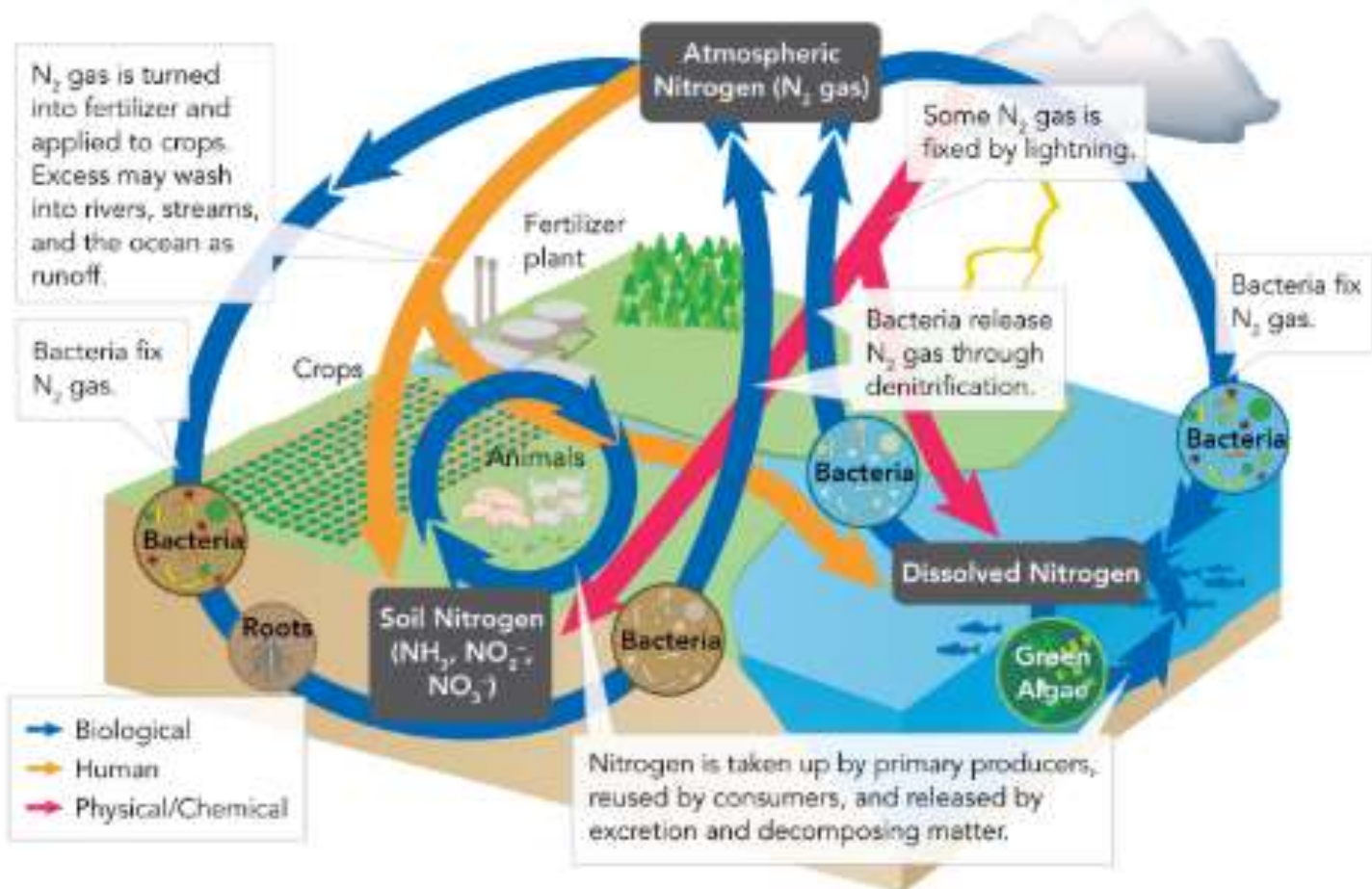
Nitrogen Cycle

- **How does leaching differ from runoff?**

Nitrogen Cycle

Figure 4-13 The Nitrogen Cycle

The atmosphere is the largest reservoir of nitrogen. Nitrogen also cycles through the biosphere, geosphere, and hydrosphere.



Matter Flow in Ecosystems

- **You should know objectives 1-10!**
- **Ask questions!**